

THE IDENTITY AND SYNONYMY OF *NEPA FUSCA* LINNAEUS, 1758 (HETEROPTERA: NEPIDAE)

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Abstract.—The nomenclatural history of *Nepa fusca* Linnaeus, 1758 is reviewed. Usages by other authors of the name *Nepa fusca* are also reviewed, some of which refer to different species, and occasionally to Belostomatidae. The synonymy of *Nepa fusca* Linnaeus, 1758 and *Laccotrepes brachialis* Gerstaecker, 1873 is established (**New Synonymy**).

Key Words: Heteroptera, Nepidae, Belostomatidae, *Laccotrepes*, synonymy

Nepa fusca has remained an enigma ever since it was described by Linnaeus (1758). It has had a confusing nomenclatural history because of uncertainty as to both its identity and provenance, the latter variously attributed to America, Asia and Africa. Linnaeus (1758, 1767) gave "Habitat in Calidis regionibus" but in 1764 gave simply "Habitat—." Gmelin (1790) gave "Habitat in Indiae aquis . . .," Turton (1802) states that it "Inhabits East India," and Fabricius variously gave "Habitat in America" (1775), "Habitat in Americae meridionalis aquis" (1781), and "Habitat in Indiae orientali aquis" (1787, 1794, 1803).

Fabricius (1775) described *Nepa fusca* as "N. ecaudata, scutello rugoso, alis niveis" indicating that the specimen was belostomatid. He cites the third description of Linnaeus (1767), but gave "Habitat in America." He further gave "Duplo major N. cinerea: tota fusca, solis alis albis," leading Esaki (1926) to suggest that the species might be *Lethocerus (Benacus) griseus* (Say).

Fabricius (1787; same in 1794) described *Nepa fusca* differently, as "N. cauda biseta, scutello rugoso, alis niveis" clearly indicating that the species was a nepid. In both (Fabricius 1787, 1794) he listed Stoll 1780, pl. I, fig. I as a citation for *fusca*, but this

must have been a lapsus (cf. Esaki 1926) because this is not a figure of a nepid, but an American belostomatid (*Zaitha stollii* Amyot and Serville, 1843: 430; pl. I, fig. II may have been intended, which is a *Laccotrepes*. As further evidence that this was a lapsus on the part of Fabricius, Stoll, in his citations for pl. I, fig. I, gave "FABRICIUS Syst. Entom. pag. 691. Nepa 2. Rustica" (= Fabricius 1775) which is clearly an American belostomatid (but not the *Nepa rustica* of Fabricius 1787, 1794, 1803, which is synonymous with *Nepa plana* Sulzer, 1776, a belostomatid from India). On page 11, Stoll cited pl. I fig. II for *Nepa cinerea* Linnaeus, but on pages 35-36 he also cited it as illustrating his "*Scorpion-aquatique gris*" from Tranquebar and Coromandel (India). Amyot and Serville (1843) gave binominal names to most of Stoll's aquatic Heteroptera, but attributed his pl. I, fig. II solely to *Nepa cinerea*, and did not mention his "*Scorpion-aquatique gris*."

Ferrari (1888), on the other hand, attributed Stoll's "*Scorpion-aquatique noir de Tranquebar*" to *fusca*, with the citation as p. 29, tab. VIII, fig. 5, 1792, a German language edition of Stoll's original work (1780-88) which was printed in parallel Dutch and French; this citation refers to p. 35, tab. VII,

fig. V in the original. Amyot and Serville (1843) give this species in error as "*Nepa rubra* Linn.," later shown by Lundblad (1933) to pertain instead to *grossus* Fabricius (= *L. kohlii* Ferrari sensu Esaki, 1926).

Esaki (1926) studied the types of *fusca* in Uppsala, reviewed the works of Fabricius, and concluded that at least two of the Fabricius descriptions refer to other species. For instance the description of *Nepa fusca* by Fabricius in 1775 apparently refers to a belostomatid, and his 1803 description is of a species smaller than *Nepa cinerea*, or only about half the length of Linnaeus' types of *fusca*. Fabricius' 1794 description matches the Linnaean species more closely; at least it is approximately the same size. Esaki thought the latter might be Ferrari's (1888) *Laccotrephes kohlii*, but this species has since been synonymized with *Laccotrephes grossus* Fabricius, 1787, described next to *L. fusca* Fabricius, 1787 in the same work so this cannot be. Lundblad, however (1933: 23) has tentatively cited *L. fusca* Fabricius, 1787 as belonging to his *Laccotrephes occultus*, new name for "*Laccotrephes fuscus* auct. in coll. partim, non *Laccotrephes fuscus* Linné, 1758." Esaki did not mention Fabricius' "Species Insectorum" (1781) where he repeated the description from his "Systema Entomologiae" (1775) but gave the habitat as "Habitat in Americae meridionalis aquis," nor his "Mantissa Insectorum" (1787) wherein he gave the same description and provenance used in his "Entomologia Systematica" (1794).

Stål (1868: 135) studied the Linnaean types of *fusca* in Uppsala, and provided a redescription in Latin. Esaki (1926) also studied the Linnaean types of *fusca* in Uppsala, stated that the two specimens were both females with lengths of 31 and 33 mm, with caudal filaments of lengths $22.5 + X$ and $21 + X$ mm respectively, with apices of the caudal filaments broken (with "+ X" Esaki indicated that an unknown additional length of caudal filament once existed). No further description was given.

Fortunately Lundblad (1933) carefully restudied the Linnaean types of *Nepa fusca* and found that Esaki's (1926) examination had been cursory indeed. The types are both males, not females as Esaki had stated, and do not belong to any Asian species known to Lundblad. Lundblad dissected and figured the paramere of one male, and provided a dorsal habitus photograph of the unspread specimen, presumably also the one he dissected. This specimen is here designated as lectotype.

The key characters given by Lundblad are: interocular space about twice the width of an eye, low prosternal carina, shape of male paramere, size of body (See also Poisson 1949: 30–31). Lundblad gave the body length of the lectotype as 30 mm, the siphon as 22 mm. The photograph clearly shows the characteristic widened abdomen.

Poisson (1949) noted that the parameres of *Laccotrephes brachialis* closely match those of *Laccotrephes fuscus*, but he failed to formally equate the two species because he thought *fuscus* was an Asian species, from "l'Inde," citing Lundblad (1933) as the source for this provenance.

Gerstaecker described *Laccotrephes brachialis* from East Africa (from a locality given as "See Jipe"). He described the prosternal carina of *L. brachialis* as low and of even height all along its length except for the anterior tubercle, which is quite removed from the anterior margin; he gave the length of the body as 40 mm, the siphon 35 mm.

Poisson (1949: 30–31; 1965: 240) restricted *L. brachialis brachialis* to those specimens with a body length of 33–40 mm and the sides of the abdomen enlarged, and gave the distribution as West Africa, Uganda, Zaire, etc. He assigned those of 37–45 mm with the sides of the abdomen parallel to *L. brachialis oculatus* Montandon, known from Sierra Leone and Zaire. Poisson (1954) has also described a considerably smaller subspecies, *L. brachialis kazibae* from Zaire, with body length given as 23–30 mm. Because they all are said to occur in Zaire, the

status of these subspecies should be carefully scrutinized, for if any two are found together they must either be considered synonyms or separate species.

SYNONYMY

The evidence presented here leaves little doubt concerning the synonymy of *Nepa fusca* Linnaeus, 1758 and *Laccotrephes brachialis* Gerstaecker, 1873 (new synonymy). This species has three salient characteristics that in combination set it apart from any other *Laccotrephes* species: 1) The unique shape of the distal part of the male paramere, which is somewhat like a crochet hook. All three subspecies share this character to a degree but have other differences (see above). 2) The shape of the abdomen, slightly expanded just behind the middle. *Laccotrephes ampliatus* (Montandon) is similar in this regard, but is definitely broader than *L. brachialis*. 3) The unique shape of the prosternal carina. No other species I have examined (including most of the known species) has the odd characteristics of a low carina with an isolated anterior tumescence removed from the anterior margin.

The usage of the names *fusca* and *brachialis* are about equal in the literature, so it is difficult to make a case for suppression of the name *fusca*, particularly in view of the previous evidence for the synonymy given by both Lundblad (1933) and Poisson (1949). The only plausible explanation of why one of these authors did not formalize the synonymy must have been their apparent belief and mind-set that *fusca* was Oriental.

Laccotrephes fuscus (Linnaeus, 1758)

Nepa fusca Linnaeus, 1758: 440. Lectotype here designated.

Nepa fusca: Linnaeus, 1764: 166.

Nepa fusca: Linnaeus, 1767: 713.

Nepa fusca: Müller, 1774: 472.

Nepa fusca: Goeze, 1778: 173.

Nepa fusca: Olivier, 1811: 189. [in part]

Laccotrephes fuscus: Stål, 1868: 135. [redescription of Linnaean type]

Laccotrephes brachialis Gerstaecker, 1873: 422. New Synonymy

Laccotrephes brachialis: Montandon, 1914: 127.

Nepa fusca: Esaki, 1926: 179. [in part]

Laccotrephes fuscus: Lundblad, 1933: 22–23. [redescription of Linnaean type]

Laccotrephes brachialis: Poisson, 1949, 30, fig. 32A, B, C, fig. 33A, B.

Laccotrephes fuscus: Poisson, 1949: 31. [comparison with *L. brachialis*]

Laccotrephes brachialis: Poisson, 1954: 17, fig. 5A.

Laccotrephes brachialis: Poisson, 1965: 240, fig. 3C.

Laccotrephes brachialis: Linnavuori, 1971: 357.

References to *L. fusca* referring to other species:

Nepa fusca: Fabricius, 1775: 692. [belostomatid sp.; *Benacus griseus*?]

Scorpion-aquatique gris Stoll, 1780: 35–36. pl. I, fig. II. [*Laccotrephes griseus* (Guerin)?]

Nepa fusca: Fabricius, 1781: 333. [belostomatid sp.; = *fusca* Fabricius, 1775]

Nepa fusca: Fabricius, 1787: 277. [*Laccotrephes occultus* Lundblad?; not *L. grossa*, which was described in the same work.]

Nepa fusca: Gmelin, 1790: 2121. [*Laccotrephes occultus* Lundblad?; = *L. fusca* F., 1787.]

Nepa fusca: Fabricius, 1794: 62. [*Laccotrephes occultus* Lundblad?; = *L. fusca* F., 1787.]

Nepa fusca: Turton, 1802: 607. [*Laccotrephes occultus* Lundblad?; = *L. fusca* F., 1787.]

Nepa fusca: Fabricius, 1803: 107. [*Laccotrephes griseus* (Guerin)?]

Nepa fusca: Olivier, 1811: 189. [in part]

Nepa fusca: Ferrari, 1888: 184. [*Laccotrephes* sp.?; synonymy; redescription; nomen inquerendum]

Nepa fusca: Esaki, 1926: 179. [*Laccotrephes* spp.; in part]

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